CLAIMS

1. A power converter comprising:

a transformer having a primary winding and a secondary winding, the primary winding coupled to receive an input voltage, and the secondary winding for providing an output voltage;

a transistor coupled to the primary winding of the transformer for controlling the current flowing through the primary winding;

a current sensing device coupled to the transistor for developing a signal indicative of the amount of current flowing through the power converter, the current sensing device forming part of a current control loop for the power converter;

a feedback controller coupled to the second winding of the transformer for providing a signal indicative of an output voltage of the power converter, the feedback controller forming part of a voltage control loop for the power converter; and

a controller operable to provide analog control of the current control loop and digital control of the voltage control loop of the power converter.

2. The power converter of claim 1 wherein the controller comprises a comparator for comparing a signal representative of the current flowing through the primary winding against a reference signal, thereby providing fast dynamic response in the current control loop of the power converter.

3. The power converter of claim 2 wherein the reference signal is programmable.

4. The power converter of claim 1 wherein the controller comprises a relatively slow, low-cost digital microcontroller.

5. The power converter of claim 1 wherein the controller comprises a digital pulse-width-modulation (PWM) controller operable to apply a signal to a gate of the transistor for turning on and off the transistor.

6. The power converter of claim 1 wherein the controller comprises:

a comparator for comparing a signal representative of the current flowing

through the primary winding against a reference signal thereby providing fast dynamic response in the current control loop of the power converter; and

digital pulse-width-modulation (PWM) controller operable to apply a signal to a gate of the transistor for turning on and off the transistor.

7. The power converter of claim 6 wherein the comparator and the digital pulse-width-modulation (PWM) controller are implemented on a single integrated circuit (IC) chip.

8. The power converter of claim 1 wherein the current sensing device comprises a resistor.

9. The power converter of claim 1 wherein the controller is operable to communicate with external circuitry to receive at least one signal for a control command for the power converter and to send at least one signal indicative of the status of a condition in the power converter.

10. The power converter of claim 1 wherein the controller comprises a port for communicating with external circuitry.

11. A method for providing control in a power converter comprising:

providing analog control of a current flowing in the power converter for fast, dynamic performance; and

providing digital control of the output voltage of the power converter.

12. The method of claim 11 comprising sensing a current flowing through a transformer of the power converter.

13. The method of claim 11 comprising detecting a value of the output voltage.

14. The method of claim 11 wherein providing digital control comprises sending out from the power converter at least one signal representative of a status of a

condition of the power converter.

15. The method of claim 11 wherein providing digital control comprises receiving at the power converter at least one command signal.

16. A power converter comprising:

a transformer having a primary winding and a secondary winding, the primary winding coupled to receive an input voltage, and the secondary winding for providing an output voltage;

a transistor coupled to the primary winding of the transformer for controlling the current flowing through the primary winding;

a feedback controller coupled to the second winding of the transformer for providing a signal indicative of an output voltage of the power converter; and

a microcontroller coupled to the transistor for turning on and off the transistor and coupled to the feedback controller for receiving the signal indicative of an output voltage of the power converter, wherein the microcontroller is operable to perform an analog comparison of a signal representative of the current flowing through the primary winding against a reference signal thereby providing fast dynamic response in an inner current control loop of the power converter, and wherein the microcontroller is operable to communicate with external circuitry to receive at least one signal for a control command for the power converter and to send at least one signal indicative of the status of a condition in the power converter.

17. The power converter of claim 16 wherein the microcontroller operates at relatively slow speed.

18. The power converter of claim 16 wherein the microcontroller comprises a digital pulse-width-modulation (PWM) controller.

19. The power converter of claim 16 wherein the microcontroller comprises random access memory (RAM) and read-only memory (ROM).

20. The power converter of claim 16 wherein control command may comprise a command for one of output voltage, current protection, standby-mode, normal mode, power ON, and power OFF.

21. The power converter of claim 16 wherein condition may comprise one of input voltage level, output voltage level, current level, and error.

22. The power converter of claim 16 wherein a level of the reference signal is programmable.

23. The power converter of claim 16 wherein the microcontroller is implemented in a single integrated circuit (IC) chip.

24. The power converter of claim 16 wherein the microcontroller comprises a serial communication port for the receiving and sending of signals.